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is thus continually changing. Two changes of position occur on the passage of each wave; first, when the stern of the vessel is raised, and, secondly, when it is depressed. In the former case the float descends absolutely and relatively with respect to the vessel, and may be made to act as a power by its weight: in the latter it ascends, and may be made to act by its buoyancy. If the specific gravity of the float be no more than half that of water, it will have in its ascent the same effect by its buoyancy as in its descent by its weight.

Let the vessel be supposed thirty feet long and ten feet wide, and the waves, such as they occur in moderate weather, about fifty feet broad and five feet high. When it blows hard they are of much greater magnitude, and the power generated by their means is consequently far more considerable. Such a wave as is described passes through a space equal to its own breadth in four seconds. A boat of the foregoing dimensions, if it have a flat bottom, will have sufficient stability to allow a float of 2000 pounds weight to be adapted to it at the distance of fifteen feet. The stern of the boat as it rises will be depressed nearly a foot below the usual water-line by the float, and as it falls will be as much elevated above this line by the buoyancy. The float also acts by its weight only when it is raised above its water line, and by its buoyancy only when depressed below it. The distance between the two positions which, were it not for these circumstances, would be about twelve feet, is thus reduced nearly to six. The power then is equal to a weight of 2000 pounds falling through a space of six feet every two seconds, and consequently equivalent to 100 men, or seven horses. But a boat of the dimensions specified is no larger than a common life-boat, which may be rowed by ten men against the waves in a storm. Nor is the case described, that in which the means proposed are employed with most advantage. It is chosen merely because it furnishes a direct comparison of their effect with that of the means in use, and as being, by its simplicity, best adapted to the purpose of illustration. All its *circumstances, the position*, number, and weight of the floats, as well as the size of the vessel and magnitude of the waves, might be conceived changed with advantage. But a description of these particulars, as well as of others connected with the subject, is precluded by the limits prescribed to observations of this kind.

The power is most conveniently, although not most advantageously, applied to raise water to a reservoir, or to force it into an air vessel; which water being allowed to escape, by an aperture at the stern of the boat, an impulsion is given on the same principle, that motion is communicated to the mill called Barker's Mill. Even in this way of employing the power, a greater velocity may be given to the boat described, moving against the waves, than it is capable of receiving from sails moving before them. The floats may be lightly constructed, and the proper weight given to them by water, which, when circumstances require them to be taken into the vessel, may be previously discharged.

The pumps intended to be worked by means of floats, are best placed close to the side, or between the timbers of the vessel; in which situation the inner extremity of the bar or lever may be more directly connected with the piston rods. The farther the outer end of the bar and float extends from the side of the vessel, and towards or beyond the stern, the greater will be the effect. A float of 200 pounds weight, and of equal buoyancy, in an ordinary sea, will do the work without intermission of at least four men, and consequently, even supposing only four gangs required to keep the pumps at work night and day, will be equal to the labour of sixteen men. The number of floats may be increased as circumstances require. When the vessel does not require pumping, the float, without being unshipped, may be drawn up, and made fast to the vessel's side or quarter.

Temporary Scaffold, by means of which the outside walls of houses may be repaired or beautified with equal safety and at less expense than usual; by Mr. Joseph Davis, of Catharine-street, Strand.

(From the Transactions of the Society for the encouragement of Arts, Manufactures, and Commerce.)

Having to repair and beautify the front of my house, which is called the Minor-Theatre, in Catharine-street, Strand, I invented a machine, which answers for such purposes much better than a scaffold, and saves considerable expense. As I conceive this contrivance may be beneficial to the public, I should be happy to submit a model thereof to the Society of Arts, &c. for their inspection.

My machine is twenty-six feet long, and cost me two pounds ten shillings; and when no longer wanted for this purpose the timber is worth two pounds. A single machine may be made thirty-six feet long, and united to any length; and when not in use may be folded up and put by as a common ladder.

On this plan of a scaffold there is no occasion to break up the pavement, or to give the least interruption to passengers in the street.

This simple and effective contrivance consists of nothing more than a couple of planks, to which two others are nailed, forming a sort of trough, or moveable scaffold, on which the workmen stand; which is suspended at any height at pleasure. There are two frames of wood, in which the trough or scaffold is fixed. In the top cross-pieces of these frames, two pullies are fitted, and round these the ropes by which the scaffold is supended are passed; the ends of these ropes, are made fast to two beams, or scaffold poles which project out of the upper windows; or they may be fixed over the parapet, or by any other means, as is thought proper. Two single pulley blocks are also suspended from these poles; and the rope, after passing under the pullies, passes over the pullies in these two blocks, and the ropes or falls come down to the machine, and are made fast to any convenient part of it; therefore, by drawing these ropes the workmen can with the greatest ease, raise or depress the suspended scaffold to any place where it is wanted for work.

Preparation of the vegetable Red, otherwise Portugal or Spanish Red.

(From the Bulletin des Neuesten.)

This red is found in commerce in thin leaves, covered on one side with a fine bronze colour, which, when moistened with water, furnishes a beautiful rose colour, and may be used at the toilet, as well as for silk, cotton, and linen. On the other side, is inscribed, in red characters, "Color fina de Tiburcio Palacio â la Subida a San Martin, de Madrid."

The same colour is sold in a liqnid state by the name of rouge a la gouttee, red drops; and in little earthenware cups, by the name of rouge en assiettes, or entasses, red cups. The following is the method of preparing it.

A certain quantity of very fine bastard saffron (carthamus tinctorius) is put into a small linen bag, and kneaded with pure river or rain water, until it ceases to give a yellow colour to the water.

The saffron, thus deprived of its yellow colouring substance, is mixed with twelve times its weight (when dry) of pure rain water, and to this is added fifteen times its weight of crystallised carbonate of soda. When the whole is well mixed, it is left at rest for two hours, and then the fluid is filtered through a piece of linen.

This fluid is yellow: some bits of cotton are put into it, and then some good citron juice is added, the whole being stirred at the same time. The bits of cotton by degrees become red, and at the end of twenty-four hours the fluid is deprived of all its red colouring matter.

The cotton thus dyed red is washed in fresh water, until it no longer colours it. This operation renders the red colour a little less lively, but it still remains very fine.

Afterwards, the dyed cotton is put into a bath of twenty times the weight of water of the raw saffron first taken, and in which has been dissolved a quantity of carbonate of soda, equal to ten parts of the weight of the saffron. The cotton is kept in it for an hour, and kneaded well. The bath will in that time acquire a yellow colour; the cotton, on the contrary, will be of a pale rose colour, and this colour is improved by washing it in pure water.

The fluid part of the bath that remains when the cotton is taken out, is mixed with citron juice, until it acquires an acidulated taste. It soon becomes then a fine rose coloured liquid, which at the commencement is thrown out by fermentation on the surface of the fluid, but which, clarifying by degrees, precipitates a very fine red powder, which is separated from the fluid, and dried gradually upon plates of porcelain. This is the vegetable or Portugal red in a powder.

This powder, diluted with citron juice, forms the liquid red, or rouge a la goutte, and which, when spread with a brush on the inner surface of an earthen cup, and suffered to dry, is then what are called rouge en assiettes, or entasses.

When leaves of paper, in the shape of cards, are coloured with this red liquid, and it is suffered to dry on them, then it